CLAIMS

1. (Original) A communication system for communication using wireless signals, said wireless signals including downlink signals to and uplink signals from mobile stations, said wireless signals having bursts in time slots comprising,

a plurality of transceiver stations having broadcast channels and dedicated channels for said wireless signals where the dedicated channels are switchable among transceiver stations independently of said broadcast channels,

system timing control means for controlling the initial timing of said bursts with initial timing advances that provide for initial guard bands between bursts,

zone manager means including,

switching processing means providing switching information for identifying candidate ones of said transceiver stations available to be used to service dedicated channels for said mobile stations,

switching control means for dynamic switching among said preferred ones of said transceiver stations to provide said dedicated channels for said mobile stations, said dynamic switching having the potential for causing ones of said bursts to have timing shifts that result in misalignment of said bursts,

macrodiversity timing control means for controlling the timing of said bursts in response to said dynamic switching to reduce said misalignment of said bursts.

2. (Original) The communication system of Claim 1 wherein said macrodiversity timing control means provides time offsets that compensate for said time shifts to thereby reduce said misalignment of said bursts.

3. (Original) The communication system of Claim 1 wherein said dynamic switching causes a first burst for one mobile station in one time slot to have a particular time shift that overlaps a second burst for another mobile station in an adjacent time slot and where said macrodiversity timing control means provides a particular time offset that compensates said particular time shift to reduce overlap of said first burst and said second burst.

4. (Original) The communication system of Claim 1 wherein said communication system is a GSM system.

5. (Original) The communication system of Claim 1 wherein said system includes one or more particular mobile stations and said zone manager means, for said particular mobile stations, includes a particular zone manager that functions as a host zone manager for said particular mobile stations and functions as an assistant zone manager for other mobile stations.

6. (Original) The communication system of Claim 1 wherein said switching control means is responsive to said switching information for dynamic switching said dedicated channels as frequently as a signal switch time determined as a function of a frame rate of said wireless signals.

7. (Original) The communication system of Claim 6 wherein said switch time is approximately determined by said signal frame rate.

8. (Original) The communication system of Claim 6 wherein said switch time is determined as a function of a multiple of said signal frame rate.

9. (Original) The communication system of Claim 6 wherein said switch time is less than one second.

10. (Original) The communication system of Claim 1 wherein said zone manager means is formed of a plurality of distributed zone managers, one for each of said transceiver stations.

11. (Original) The communication system of Claim 10 wherein said zone managers are co-located with said transceiver stations at macrodiverse locations.

12. (Original) The communication system of Claim 11 wherein said zone managers are interconnected with each other forming a network.

13. (Original) The communication system of Claim 10 wherein two or more of said zone managers are co-located at a common location.

14. (Original) The communication system of Claim 13 wherein said common location is a base station controller in a cellular system.

15. (Original) The communication system of Claim 10 wherein said plurality of zone managers includes, for each of said particular mobile stations, a host zone manager and one or more assistant zone managers.

16. (Original) The communication system of Claim 1 wherein,

said zone manager means is formed of a plurality of discreet macrodiverse zone managers, one for each of said transceiver stations,

said transceiver stations include a plurality of macro-diverse broadcasters distributed at macro-diverse broadcaster locations for broadcasting said downlink signals and include a plurality of macro-diverse collector means distributed at macro-diverse collector locations for receiving said uplink signals and providing received signals for said particular mobile station,

said switching processing means for a host zone manager provides host switching information for determining candidate ones of said broadcasters and candidate ones of said collector means for said dedicated channels for said mobile stations,

said switching control means dynamically selects said dedicated channels for said mobile stations by selecting said candidate ones of said broadcasters to provide particular downlink signals and dynamically selects said candidate ones of said collector means to receive particular uplink signals for said particular mobile stations.

17. (Original) The communication system of Claim 16 wherein,

said switching control means for said host zone manager is responsive to said host switching information for switching said dedicated channels.

18. (Original) The communication system of Claim 16 wherein,

said switching control means for said host zone manager is responsive to said host switching information for switching said dedicated channels as frequently as a signal switch time determined as a function of a signal frame rate of said wireless signals.

19. (Original) The communication system of Claim 18 wherein said switch time is determined as a function of a multiple of said signal frame rate.

20. (Original) The communication system of Claim 16 wherein each one of said zone managers has,

a resource manager for managing available resources in said communication system,

an airlink controller for controlling the radio channels in said communication system,

interface means for providing interfaces for said one of said zone managers.

21. (Original) The communication system of Claim 20 wherein said interface means includes a zone_manager-to-zone_manager interface manager for controlling zone manager links among said zone managers.

22. (Original) The communication system of Claim 20 wherein said interface means includes a transceiver interface for controlling a transceiver link from said particular one of said zone managers to a corresponding transceiver station.

23. (Original) The communication system of Claim 20 wherein said interface means includes a controller link to said base station controller for communication between said zone manager and the base station controller.

24. (Original) The communication system of Claim 24 wherein said controller link is an Abis link.

25. (Original) The communication system of Claim 16 wherein one or more of said zone managers is integrated into one or more of said transceiver stations.

26. (Original) The communication system of Claim 16 wherein said switching control means includes broadcaster commands for controlling downlink signals to each of selected ones of said mobile stations and collector commands for controlling the plurality of macro-diverse collector means for switching the uplink signals for each of said selected ones of said mobile stations.

27. (Original) The communication system of Claim 1 wherein a postulated dynamic switching has the potential for causing said ones of said bursts to have timing shifts that result in other misalignments with other ones of said burst where said other misalignments will not be adequately reduced by said macrodiversity timing control means whereby said postulated dynamic switching is inhibited.

28. (Original) The communication system of Claim 1 wherein said wireless signals employ multiple access protocols.

29. (Original) The communication system of Claim 28 wherein said wireless signals employ TDMA protocols.

30. (Original) The communication system of Claim 1 wherein said transceiver stations communicate over a region containing one or more zones.

31. (Original) The communication system of Claim 2 wherein said time offsets for said mobile stations are selected to be sub-optimal for some of the transceiver stations so as to mitigate burst misalignment problems caused by switching to other of the transceiver stations.

32. (Original) The communication system of Claim 2 wherein said time offsets for said mobile stations for uplink communications are different from said time offsets for downlink communications.

33. (Original) The communication system of Claim 32 wherein, for each of said mobile stations, a plurality of candidate transceiver stations are present for serving dedicated channels, said candidate transceiver stations having candidate timing advances for use in serving each of said mobile stations, said timing advances determined for each of said mobile stations using an average of said candidate timing advances.

34. (Original) The communication system of Claim 33 wherein said average is a weighted average based upon probabilities of selecting each of said candidate transceiver stations.

35. (Original) The communication system of Claim 1 wherein bursts from said mobile stations have an initial burst sequence order that when received at ones of said transceiver stations causes a timing misalignment and wherein said macrodiversity timing control means reschedules said initial burst sequence order to a rescheduled sequence order that when received at ones of said transceiver stations reduces said burst misalignment.

36. (Original) The communication system of Claim 35 wherein said rescheduled sequence order is based upon grouping bursts in groups to form said rescheduled sequence order.

37. (Original) The communication system of Claim 36 wherein said groups are periodically reformed.

38. (Original) The communication system of Claim 36 wherein said groups are reformed in response to each instance of said dynamic switching.

39. (Original) The communication system of Claim 1 wherein bursts from said mobile stations are assigned in time slots with an initial time slot sequence order that when received at ones of said transceiver stations causes an initial burst sequence timing misalignment and wherein said macro-diversity timing control means reassigns said time slots to have a reassigned time slot sequence order that reduces said misalignment.

40. (Original) The communication system of Claim 39 wherein said reassigned time slot sequence order is based upon grouping bursts in groups.

41. (Original) The communication system of Claim 40 wherein said groups are periodically reformed.

42. (Original) The communication system of Claim 40 wherein said groups are reformed in response to each instance of said dynamic switching.

43. (Original) The communication system of Claim 1 wherein said macrodiversity timing control means operates with an update procedure having an execution time, T_E, and wherein said update procedure is initiated by said zone manager means whenever a dynamic switching occurs.

44. (Original) The communication system of Claim 43 wherein said macrodiversity timing control means inhibits updates whenever said execution time, T_E, is small compared with a time duration, T_B, since the last update procedure was initiated.

45. (Original) The communication system of Claim 44 wherein if T_B is determined to be small compared with T_E, the high-speed update procedure is aborted.

46. (Original) The communication system of Claim 1 wherein said macrodiversity timing control means operates with an update procedure having an execution time, T_E, and wherein a function F1 initiates said update procedure whenever a dynamic switch occurs, wherein a function F2 sets a window, T_W, each time a timing advance update procedure is initiated and wherein a function F3 enables a calculated timing advance to be applied to a mobile station unless a subsequent timing advance update procedure is initiated while the window, T_W, is active.

47. (Original) The communication system of Claim 1 wherein said transceiver stations include software defined radios.

48. (Original) In a communication system for communication using wireless signals, said wireless signals including downlink signals to and uplink signals from mobile stations, the method comprising,

transmitting, from a plurality of transceiver stations, broadcast channels and dedicated channels for said wireless signals, were the dedicated channels are switchable independently of said broadcast channels,

controlling the timing of said bursts with initial timing advances that provide for initial guard bands between bursts,

providing switching information for identifying candidate ones of said transceiver stations to service dedicated channels for said mobile stations,

dynamically switching among said candidate ones of said transceiver stations to provide said dedicated channels for said mobile stations, said switching causing ones of said bursts to have time shifts,

controlling the timing of said bursts in response to said dynamic switching to reduce misalignment of said bursts.

49. (Original) In the method of Claim 48 wherein said controlling of the timing of said bursts provides offsets that compensate for said time shifts to thereby reduce said misalignment of bursts.